Observations of the Planets Mars and Ceres, made at the Royal Observatory, Greenwich, about the time of their recent conjunction.

(*Communicated by the Astronomer Royal.*)

The observations were made with the East, or Sheepshanks, equatoreal, aperture 6·7 inches, by taking transits over two cross wires at right angles to each other, and each inclined 45° to the parallel of declination. Magnifying power 55.

The observations are corrected for refraction, for parallax, for the error of inclination of the wires, for the motion of the planets, and for the defective illumination of *Mars*.

The two planets and the comparison stars were observed in the same position of the instrument, and the difference in the R.A. and N.P.D. of *Mars* and *Ceres* can be directly inferred from the given measures.

1893MNRAS..53..450.

Mars.

Greenwich Mean Solar Time.	Observer.	Planet − ✱R.A. (corrected).	Planet − ✱N.P.D. (corrected.)	No. of Comps.	Appt. R.A. of Planet.	Secs. of Tab. R.A.	Appt. Error of Tab. R.A.	Appt. N.P.D. of Planet.	Secs. of Tab. N.P.D.	Appt. Error of Tab. N.P.D.	Comp. Stars.
1893 d h m s		m s	′ ″		h m s	s	s	° ′ ″	″	″	
Apr. 15 8 8 38	A.C.	+ 0 4·85	− 7 41·1	5	4 40 22·93	23·16	+0·23	66 44 4·0	3·9	−0·1	*a*
15 8 10 50	B.	+ 0 5·69	− 7 42·1	5	4 40 23·77	23·42	−0·35	66 44 3·0	3·4	+0·4	*a*
15 8 12 1	A.C.	− 2 56·54	− 3 16·1	2	4 40 23·08	23·56	+0·48	66 44 2·1	3·1	+1·0	*b*
15 8 23 50	B.	− 2 54·69	− 3 17·3	2	4 40 24·93	24·94	+0 01	66 44 0·9	0·4	−0·5	*b*
18 8 56 35	A.C.	+ 1 37·87	− 9 14·4	5	4 48 52·73	53·25	+0·52	66 28 3·5	5·8	+2·3	*d*
18 9 0 15	,,	+ 2 59·75	+ 2 25·3	3	4 48 53·07	53·68	+0·61	66 28 4·1	5·0	+0 9	*c*
18 9 24 18	,,	+ 0 4·87	− 1 50·7	1	...	56 49	...	...	0·0	...	*e*
24 8 50 12	,,	+11 51·22	+ 1 53·6	3	5 5 44·52	44·96	+0·44	66 1 40·5	38·9	−1·6	*f*
24 8 50 12	,,	+ 9 59·53	− 5 54·5	3	5 5 44·64	44·96	+0·32	66 1 37·0	38·9	+1·9	*g*
24 9 4 12	,,	+ 4 11·63	+ 9 8·0	1	5 5 46·31	46·60	+0·29	66 1 36·8	36·7	−0·1	*h*
25 9 17 53	B.	+12 26·99	− 4 1·8	4	5 8 37·11	37·27	+0·16	65 57 50·9	50·0	−0·9	*i*
25 9 17 53	,,	+12 23·51	+ 7 44·0	4	5 8 36·91	37·27	+0·36	65 57 56·7	50·0	−6·7	*j*
25 9 17 53	,,	+ 7 2·48	+ 5 25·1	4	5 8 37·16	37·27	+0·11	65 57 53·9	50·0	−3·9	*h*
25 9 26 3	,,	+ 2 58·68	+ 6 52·0	3	5 8 38·14	38·23	+0·09	65 57 51·2	48·7	−2·5	*k*
25 9 26 3	,,	+ 2 7·25	+14 3·3	3	5 8 38·16	38·23	+0·07	65 57 50·5	48·7	−1·8	*l*
27 9 32 18	H.	+12 42·83	− 1 35·9	3	5 14 17·49	17·35	−0·14	65 50 52·9	53·7	+0·8	*h*

Ceres.

Greenwich Mean Solar Time.	Observer.	Planet − ✱ R.A. (corrected.)	Planet − ✱ N.P.D. (corrected.)	No. of Comps.	Appt. R.A. of Planet.	Secs. of Tab. R.A.	Appt. Error of Tab. R.A.	Appt. N.P.D. of Planet.	Secs. of Tab. N.P.D.	Appt. Error of Tab. N.P.D.	Comp. Stars.
1893 d h m s		m s	′ ″		h m s	s	s	° ′ ″	″	″	
Apr. 15 8 8 4	A.C.	− 0 29·37	− 3 49·0	5	4 39 48·71	48·31	−0·40	66 47 56·1	59·1	+3·0	*a*
15 8 10 15	B.	− 0 29·22	− 3 51·9	5	4 39 48·86	48·46	−0·40	66 47 53·2	58·7	+5·5	*a*
15 8 11 27	A.C.	− 3 30·93	+ 0 34·8	2	4 39 48·69	48·54	−0·15	66 47 53·0	58·4	+5·4	*b*
15 8 23 14	B.	− 3 30·41	+ 0 33·1	2	4 39 49·21	49·34	+0·13	66 47 51·3	56·9	+5·6	*b*
18 8 52 30	A.C.	− 2 28·06	− 4 16·9	5	4 44 46·80	46·52	−0·28	66 33 1·0	7·2	+6·2	*d*
18 8 56 9	„	− 1 6·35	+ 7 23·2	3	4 44 46·97	46·77	−0·20	66 33 2·0	6·5	+4·5	*c*
18 9 20 11	„	− 4 2·69	+ 3 2·3	1	...	48·43	...	...	1·7	...	*e*
24 8 39 18	„	+ 0 55·46	+ 5 38·0	3	4 54 48·76	48·40	−0 36	66 5 24·9	23·4	−1·5	*f*
24 8 39 18	„	− 0 56 22	− 2 10·1	3	4 54 48·89	48·40	−0·49	66 5 21·4	23·4	+2·0	*g*
24 8 53 18	„	− 6 44·88	+12 54·0	1	4 54 49·80	49·38	−0·42	66 5 22·8	20·9	−1·9	*h*
25 9 5 50	B.	+ 0 22·54	− 1 2·7	4	4 56 32·66	32·27	−0·39	66 0 50·0	54·4	+4·4	*i*
25 9 5 50	„	+ 0 19·06	+10 43·2	4	4 56 32·46	32·27	−0·19	66 0 55·9	54·4	−1·5	*j*
25 9 5 50	„	− 5 1·97	+ 8 24·2	4	4 56 32·71	32·27	−0·44	66 0 53·0	54·4	+1·4	*h*
25 9 14 0	„	− 9 6·18	+ 9 52·3	3	4 56 33·28	32·85	−0·43	66 0 51·5	53·0	+1·5	*k*
25 9 14 0	„	− 9 57·61	+17 3·5	3	4 56 33·30	32·85	−0·45	66 0 50 7	53·0	+2·3	*l*
27 9 15 33	H.	− 1 36·09	− 0 15·3	7	4 59 58·57	58·18	−0·39	65 52 13·5	16·4	+2 9	*h*

The means of the apparent errors of tabular places, weighted proportionally to the number of comparisons with each star, give results as follows :—

	Day and hour d h	Error of Tab. R.A.	Error of Tab. N.P.D.	Error of Tab. Longitude.	Error of Tab. N.P.D.
Mars	Ap. 21 10	+0·20	−0·8	+2·8	−0·5
Ceres	Ap. 21 20	−0·34	+2·9	−4·9	+2·4

Comparison Stars.

Star's Name.	R.A. 1893·0. h m s	N.P.D. 1893·0. ° ′ ″	Authority.
a. W.B. (2) IV., 843	4 40 18·80	66 51 52·0	Berlin Zones, 17, 38, 41.
b. W.B. (2) IV., 918	4 43 20·32	66 47 25·2	„ „ 11, 17, 38, 41.
c. W.B. (2) IV., 975	4 45 54·04	66 25 45·9	„ „ 11, 17, 206, 212.
d. Lalande, 9145, –6, –7	4 47 15·57	66 37 25·0	„ „ 11, 17, 38, 41, and 2 Paris Observations.
e. B.D. + 23°, 766	4 48 50	66 30	Bonn Observations, vol. iv.
f. W.B. (2) IV., 1168	4 53 54·02	65 59 54·1	Berlin Zones, 38.
g. W.B. (2) IV., 1213	4 55 45·82	66 7 38·7	„ „ 215.
h. 103 Tauri	5 1 35·37	65 52 36·2	Greenwich 1880 Catalogue, and Greenwich Observations, 1891–92.
i. W.B. (2) IV., 1226	4 56 10·84	66 1 59·9	Berlin Zones, 215.
j. W.B. (2) IV., 1227	4 56 14·12	65 50 20·0	Weisse's Bessel.
k. W.B. (2) V., 53	5 5 40·13	65 51 6·7	Berlin Zones, 190, 208.
l. W.B. (2) V. 93, 94	5 6 31·58	65 43 54·8	„ „ 190, 208.

Notes.

The tabular places of *Mars* have been interpolated from the *Nautical Almanac*; those of *Ceres* have been supplied by the Superintendent of the *Nautical Almanac*.

The initials H., A.C., B., are those of Mr. Hollis, Mr. Crommelin, and Mr. Bryant respectively.

N N

Royal Observatory, Greenwich:
1893 *May* 9.

Ephemeris for Physical Observations

Greenwich Noon.	P	L − O.	Diff.	B	Δ − L.	Apparent Diameter. Equat.	Phase.	Polar.
1893.	°	°		°	°	″	″	″
June 25	344·313	275·823	406	+3·031	− 7·993	34·30	0·17	32·10
27	344·455	276·229	401	·036	8·217	34·42	·18	32·22
29	344·597	276·630	395	·041	8·436	34·55	·19	32·34
July 1	344·738	277·025	390	·047	8·650	34·69	·20	32·46
3	344·878	277·415	384	·052	8·859	34·83	·21	32·59
5	345·017	277·799	379	+3·057	− 9·062	34·97	0·22	32·73
7	345·154	278·178	373	·062	9·259	35·12	·23	32·87
9	345·289	278·551	366	·068	9·451	35·27	·24	33·01
11	345·423	278·917	360	·073	9·636	35·43	·25	33·16
13	345·556	279·277	353	·078	9·815	35·59	·26	33·31
15	345·687	279·630	346	+3·083	− 9 987	35·76	0·27	33·46
17	345·816	279·976	340	·088	10·152	35·93	·28	33·62
19	345·942	280·316	332	·093	10·310	36·10	·29	33·79
21	346·067	280·648	324	·098	10·461	36·28	·30	33·96
23	346·189	280·972	316	·103	10·604	36·47	·31	34·13
25	346·308	281·288	309	+3·108	−10·740	36·66	0·32	34·31
27	346·426	281·597	300	·113	10·868	36·85	·33	34·49
29	346·541	282·897	292	·118	10·987	37·05	·34	34·67
31	346 653	282·189	284	·122	11·098	37·25	·35	34·86
Aug. 2	346·762	282·473	275	·127	11·201	37·46	·36	35·05
4	346·868	282·748	265	+3·132	−11·295	37·67	0·36	35·25
6	346·971	283·013	256	·137	11·380	37·88	·37	35·45
8	347 070	283·269	246	·142	11·455	38·10	·38	35·66
10	347·166	283·515	237	·146	11·521	38·32	·39	35·87
12	347·259	283·752	227	·151	11·577	38·55	·39	36·08
14	347·348	283·979	216	+3·155	−11·623	38·78	0·40	36·30
16	347·433	284·195	205	·160	11 658	39·02	·40	36·52
18	347·514	284·400	195	·165	11·683	39·26	·41	36·74
20	347·591	284·595	184	·169	11·697	39·50	·41	36·97
22	347 664	284·779	172	·174	11·700	39·74	·41	37·20
24	347·732	284·951	161	+3·179	−11·692	39·99	0·41	37·43
26	347·796	285 112	150	·183	11·673	40·24	·42	37·66
28	347·856	285·262	137	·188	11·642	40·50	·42	37·90